



UNITED STATES DEPARTMENT OF COMMERCE
Patent and Trademark Office

Address: COMMISSIONER OF PATENTS AND TRADEMARKS
Washington, D.C. 20231

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/988,686	12/11/97	KONECNI	A TI-22166

023494 MM92/0830
TEXAS INSTRUMENTS INCORPORATED
P O BOX 655474, M/S 3999
DALLAS TX 75265

EXAMINER

EATON, K

ART UNIT

PAPER NUMBER

2823

DATE MAILED:

08/30/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

08/988,686

Applicant(s)

KONECNI ET AL.

Examiner

Kurt M. Eaton

Art Unit

2823

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- 1) ☒ Responsive to communication(s) filed on 20 March 2000.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 21-25 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 21-25 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
- a) ☐ All b) ☐ Some * c) ☐ None of the CERTIFIED copies of the priority documents have been:
1. ☐ received.
 2. ☐ received in Application No. (Series Code / Serial Number) _____.
 3. ☐ received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Specification

2. The substitute specification filed 8/31/99 has been entered.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 21 is rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Subject matter not properly described in the specification as originally filed is found at lines 6-8 of claim 21 and, more specifically, includes the limitation "... said conductive structure having an opening with sidewalls and a bottom and exposes a portion of said first conductive structure...". How is an opening formed in the conductive structure such that it exposes a portion of itself at a bottom portion of the opening?

Claim Rejections - 35 USC § 102

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

6. Claims 21 and 24 are rejected under 35 U.S.C. 102(e) as being anticipated by Nakata.

In re claim 21, Nakata shows in Figures 4 and 5A-5F a method of fabricating an electronic device having a first conductive structure (33) electrically connected to a second conductive structure (37) situated over a semiconductor substrate, the method including the steps of forming the first conductive structure; forming an insulating layer (34) over the first conductive structure, wherein the insulating layer has an opening with sidewalls and a bottom and exposes a portion of the first conductive structure; providing a gas including hydrogen incorporated within a plasma into the opening in the insulating layer; and depositing a conductive material (37) into the opening using CVD {column 4, line 19 – column 7, line 59; column 9, line 24-40; column 10, lines 19-44}.

In re claim 24, Nakata shows wherein the conductive material is made of a metal selected from the group of aluminum, copper, or titanium, or a combination thereof column 7, lines 54-59}.

7. Claims 21, 23, and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Taguwa.

In re claim 21, Taguwa shows in Figures 1A-1D and 2A-2C a method of fabricating an electronic device having a first conductive structure (3) electrically connected to a second conductive structure (6) situated over a semiconductor substrate, the method including the steps of forming the first conductive structure; forming an insulating layer (4) over the first conductive structure, wherein

Art Unit: 2823

the insulating layer has an opening with sidewalls and a bottom and exposes a portion of the first conductive structure; providing a gas including hydrogen incorporated within a plasma into the opening in the insulating layer; and depositing a conductive material (6) into the opening using CVD {column 4, lines 6-54}.

In re claim 23, Taguwa shows wherein the gas additionally includes argon {column 4, lines 32-36}.

In re claim 25, Taguwa shows wherein gas including hydrogen incorporated within a plasma removed residue (3a) formed in the opening in the insulating layer {column 4, lines 32-40}.

8. Claims 21 and 22 are rejected under 35 U.S.C. 102(e) as being anticipated by Park et al..

In re claim 21, Park et al. (herein referred to as Park) shows in Figures 3 a method of fabricating an electronic device having a first conductive structure (34) electrically connected to a second conductive structure (42) situated over a semiconductor substrate, the method including the steps of forming the first conductive structure; forming an insulating layer (36) over the first conductive structure, wherein the insulating layer has an opening with sidewalls and a bottom and exposes a portion of the first conductive structure; providing a gas including hydrogen incorporated within a plasma into the opening in the insulating layer; and depositing a conductive material (42) into the opening using CVD {column 2, line 44 – column 3, line 33}.

In re claim 22, Taguwa shows wherein the gas additionally includes helium {column 3, lines 25-29}.

Response to Arguments

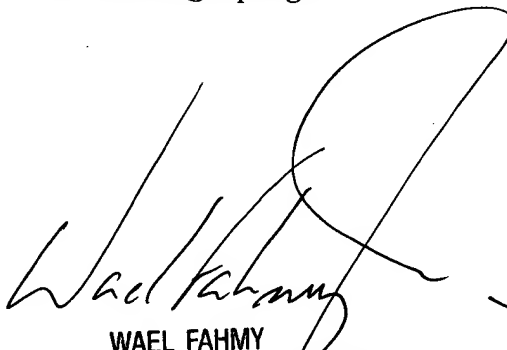
9. Applicant's arguments with respect to claims 21-25 have been considered but are moot in view of the new ground(s) of rejection.

Art Unit: 2823

Conclusion

10. Paper related to this application may be submitted directly to Art Unit 2823 by facsimile transmission. Papers should be faxed to Art Unit 2823 via the Art Unit 2823 Fax Center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989). The Art Unit 2823 Fax Center number is (703) 308-7722 or -7724. The Art Unit 2823 Fax Center is to be used only for papers related to Art Unit 2823 applications.

Any inquiry concerning this communication of earlier communication from the examiner should be directed to **Kurt Eaton** at (703) 305-0383 and between the hours of 8:00 AM to 4:00 PM (Eastern Standard Time) Monday through Friday or by e-mail via kurt.eaton@uspto.gov.



Wael Fahmy
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800